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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,047	10/21/2003	Koji Sasaki	SON-2829	3405

23353 7590 01/31/2006

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EXAMINER

ZERVIGON, RUDY

ART UNIT PAPER NUMBER

1763

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,047

Applicant(s)

SASAKI ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 4, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa; Rajinder et al (USPat. 6,245,192) in view of Umotoy; Salvador et al. (US 6,079,356 A). Dhindsa teaches a thin-film deposition device (Figures 2,3; column 4, lines 9-60) comprising: a vacuum chamber ("plasma reactor"; Figure 2; column 3, lines 64-67); a substrate holder (not labelled; Figure 3) provided in the vacuum chamber ("plasma reactor"; Figure 2; column 3, lines 64-67); and at least one tubular gas supply end (22, Figures 2,3; column 4, lines 9-60) that supplies gas towards a substrate mounting-face on the substrate holder (not labelled; Figure 3), wherein the gas supply end (22, Figures 2,3; column 4, lines 9-60) includes therein barriers (30A-C, Figures 2,3; column 4, lines 9-60) that control the gas flow in the gas supply end (22, Figures 2,3; column 4, lines 9-60) and that are disposed at predetermined intervals toward a gas supply port (volume within 32, 34, Figures 2) of the gas supply end (22, Figures 2,3; column 4, lines 9-60), each of the barriers (30A-C, Figures 2,3; column 4, lines 9-60) having a plurality of apertures (52A-C, Figures 2; column 4, lines 9-60) - claim 1

Dhindsa further teaches:

- i. The thin-film deposition device (Figures 2,3; column 4, lines 9-60) according to claim 1, wherein the gas supply end (22, Figures 2,3; column 4, lines 9-60) is connected with a plurality of gas supply tubes (40,44, Figures 3) that introduce gas into the gas supply end (22, Figures 2,3; column 4, lines 9-60), as claimed by claim 4

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- ii. The thin-film deposition device (Figures 2,3; column 4, lines 9-60) according to claim 1, wherein the gas supply end (22, Figures 2,3; column 4, lines 9-60) has a structure such that gas is supplied in a collimated fashion to a long rectangular area on the substrate mounting-face across the width thereof, as claimed by claim 5 – Applicant's claim requirement of "a structure such that gas is supplied in a collimated fashion to a long rectangular area on the substrate mounting-face across the width thereof " is a claim requirement of intended use of the pending apparatus claims. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Exparte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).
- iii. The thin-film deposition device (Figures 2,3; column 4, lines 9-60) according to claim 1, wherein the gas supply end (22, Figures 2,3; column 4, lines 9-60) has a structure such that gas is supplied to the entire surface of a substrate mounted on the substrate mounting-face, as claimed by claim 7.

Dhindsa does not teach Dhindsa's thin-film deposition device (Figures 2,3; column 4, lines 9-60) according to claim 1, wherein Dhindsa's barriers (30A-C, Figures 2,3; column 4, lines 9-60) that are disposed closer to Dhindsa's gas supply port (volume within 32, 34, Figures 2) have a larger

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number of apertures (52A-C, Figures 2; column 4, lines 9-60) each having smaller opening spaces than the barriers (30A-C, Figures 2,3; column 4, lines 9-60) disposed further from the gas supply port (volume within 32, 34, Figures 2).

Umotoy teaches a deposition apparatus (Figure 8, 5; column 10; lines 10-65) including an aperture distribution " $N(r)$ " on Umotoy's showerhead 120 (column 7, line 64 – column 8, line 21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize Dhindsa's number and distribution of Dhindsa's apertures (52A-C, Figures 2; column 4, lines 9-60) as taught by Umotoy (column 14, lines 57-61).

Motivation to optimize Dhindsa's number and distribution of Dhindsa's apertures (52A-C, Figures 2; column 4, lines 9-60) is for uniform coating thickenss as taught by Umotoy (column 14, lines 57-61).

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa; Rajinder et al (USPat. 6,245,192) and Umotoy; Salvador et al. (US 6,079,356 A) in view of Rudolph; James W. et al. (US 5,853,485 A). Dhindsa and Umotoy are discussed above. Dhindsa and Umotoy do not teach Dhindsa's thin-film deposition device (Figures 2,3; column 4, lines 9-60) according to claim 1, wherein said at least one tubular gas supply end (22, Figures 2,3; column 4, lines 9-60) comprises a plurality of gas supply ends.

Rudolph teaches plural gas supply ends (458; Figure 15) for a deposition apparatus (400; Figure 15).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to reproduce Dhindsa's tubular gas supply end (22, Figures 2,3; column 4, lines 9-60) into plural gas supply ends as taught by Rudolph.

Motivation to reproduce Dhindsa's tubular gas supply end (22, Figures 2,3; column 4, lines 9-60) into plural gas supply ends as taught by Rudolph is for increasing production of processed wafers. Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa; Rajinder et al (USPat. 6,245,192) and Umotoy; Salvador et al. (US 6,079,356 A) in view of Hayashi; Shigenori et al. (US 5,578,130 A). Dhindsa and Umotoy are discussed above. and Umotoy do not teach Dhindsa's thin-film deposition device (Figures 2,3; column 4, lines 9-60) according to claim 5, wherein Dhindsa's substrate holder (not labelled; Figure 3) includes a sliding mechanism that moves the substrate mounting-face parallel to the short axis of the long rectangular area to which the gas is supplied.

Hayashi teaches a deposition apparatus (Figure 1; column 7, line 66 – column 8, line 44) including a substrate holder capable of catessian movements (column 5; lines 60-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Dhindsa's substrate holder (not labelled; Figure 3) with Hayashi substrate holder.

Motivation to replace Dhindsa's substrate holder (not labelled; Figure 3) with Hayashi substrate holder is for controlling the contour of coatings as taught by Hayashi (column 5; lines 60-64).

Response to Arguments

5. Applicant's arguments filed November 15, 2005 have been fully considered but they are not persuasive.

6. Applicant states:

“

The disclosure contained in Umotoy does not disclose a series of baffles, but rather one plate on which there is a pattern of apertures. The apertures are distributed over the plate with the aperture density increasing in an outward radial direction. in contrast, the present invention discloses apertures that increase in density (number of apertures), not radially, but by barrier, with the density increasing from the barrier furthest from the gas supply port to the barrier closest to the gas supply port. Additionally, none of the cited prior art indicates a change in aperture size between baffles, which is a specific element of claim 2 of the present invention.

“

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). It is noted that the Examiner did not cite Umotoy for teaching “baffles” which is assumed to be Applicant’s claimed “barriers”. Specifically, the Examiner applied Dhindsa as teaching Applicant’s “barriers” (30A-C, Figures 2,3; column 4, lines 9-60). Further, the Examiner cites Umotoy for teaching aperture distributions “N(r)” on Umotoy’s showerhead 120. Umotoy clearly teaches that a barrier’s apertures may be optimized spacially. Dhinda teaches plural barriers as described above. The

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Examiner believes that the artesen would know that Umotoy's teaching can be applied individually to each of Dhinda's barriers (30A-C, Figures 2,3; column 4, lines 9-60).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

